

Science Explains What It Is That Makes Us "Feel Good"



"When we enjoy ourselves like this on a warm day we 'feel good' because the sensations that reach our brain through the skin are a part of the nerve complex we call 'happiness.'"

MOST of us know what it means to "feel good," and those who do not certainly know what it means to "feel bad." Few people, however, have any definite idea of the exact causes that produce these states of feeling. We know, for instance, that a pleasant breeze on a moderately warm day is likely to make us feel good. We know that a good dinner properly digested has a similar effect. But the exact paths by which this feeling is spread all through our organism is a mystery to most people.

Professor George V. N. Dearborn of the Tufts College Medical and Dental Schools, Boston, and the Sargent Normal School, Cambridge, has made a most ingenious attempt to explain scientifically what it is that makes us "feel good" and also, to some extent, what makes us "feel bad."

Among his conclusions he finds that the 4,000,000 villi of the intestine, little tufts, rich in smooth muscle and sympathetic nerves, adapt the nutritive fats and proteins of the blood to the immediate needs of the nerve cells and may, besides, send sympathetic influences which, fusing in the brain, make us "feel good" or generally happy.

"Euphoria" is the pretty scientific word that he uses for the condition of feeling generally well and happy. "Dysphoria" is the corresponding word for feeling bad.

This scientist finds that three classes of factors principally make up the condition of "Euphoria": (A) Nutritional and sympathetic influences from the active intestine villi; (B) Kinesthesia, or the sense of movement, and (C) the epicritic impulses or the impulses which flow from sensations felt in the skin.

The nutritional influences toward good humor or feeling good go to the neurons, or nervous units, and especially to those in the gray layer of the brain and trunk nerves through the blood streams from the liver and digestive centres. The sympathetic impulses that also contribute to feeling good are certain nerve currents which experimental physiology and the investigator's personal experience both suggest to be in operation. These impulses from the intestines have much to do with the determination of moods and passions and temperaments.

Professor Dearborn says that under normal conditions there is a direct relationship between absorption of food from the small intestines and the general state of the mind. This is why acute fatigue is so immediately relieved by a glass of hot milk or malted milk or some variety of soup. This profound physiological truth also explains why the worried man, on coming home from the office feels his worries slip away so very quickly after dinner. There is a "direct nutritive stimulation" of the central, and especially the cortical, nerve centres.

"It is not a traditional delusion," says Professor Dearborn, "that fat men and boys are usually good natured, and lean women cuttingly keen and not, obviously, too happy. On the one hand, the Eskimos, and on the other hand, the races of Southern Europe, both eaters of much fat, certainly have a higher euphoric index than the Scotchman, for example, or the thin, down-East Yankee.

A comfortable condition of the nerve cells is dependent on the supply of "Nissl's granules," a complex substance compounded of fat and protein, in which the characteristic determinant is what the biologists term a lipid, a fatlike material, or phosphorized fat. Experiments have shown that there is a very quick loss of this material in the nerve cells when the loss of material by the body exceeds the intake. In addition to these important bodies the sheath of the principal nerves is a fatty substance, very liable to suffer from the same causes.

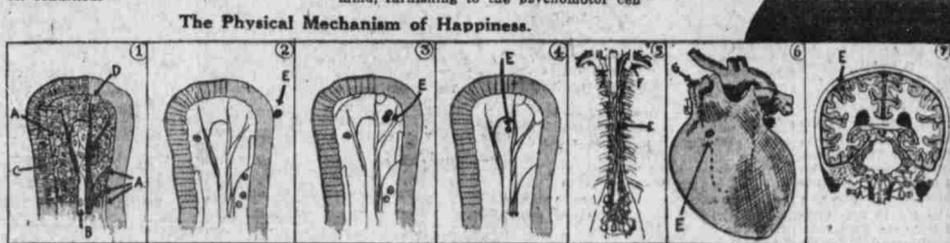
The minute nerve cells are in immediate and constant relation with the blood stream. A blood corpuscle passes entirely

Why You Have That Lazy, Contented Feeling After a Good Meal; Why We Love to Bask in the Warm Summer Sunshine; Why Dancing Makes Us Happy; What Makes Us Uncomfortable on Hot Days and Why Everybody Hates Humid, Sticky Weather

through the circulation in about thirty seconds. The unification of nerve cell nutrition and blood from the intestine is surprisingly complete and rapid. An increase in the fat content taken up by the intestine is almost immediately used in the lining of the brain and trunk nerves, raising the tone of the nerve cells to a better condition.

influences, from as many receptors in the joints, muscles, tendons, skin and bones, are continually pouring into our centres of consciousness.

"These," says Professor Dearborn, "represent in the ultimate analysis the environment to the personality within and more specifically integrate the body and the mind, furnishing to the psychomotor cen-



The Physical Mechanism of Happiness.
 1—Section of intestinal villus. A, lymph corpuscles that absorb food particles; B, lymphatic duct that conveys nourishment to nerve cells; C, wall of villus; D, border of lymphatic duct.
 2—Intestinal villus, showing food particle (E) about to be absorbed into the digestive system through the villus.
 3—Food particle (E) in interior of villus, where it is extracted from the food particle by the lymph corpuscles passing through the villus and carried to the lining of the intestine.
 4—Fatty globule (E) which has been extracted from the food particle through the lymph corpuscles passing through the villus and carried to the lining of the intestine.
 5—Fatty globule (E) passing through the subclavian vein (G), on its way to the brain and nervous system.
 6—Fatty globule (E) entering the heart through the subclavian vein (G), on its way to the brain and nervous system.
 7—After passing through the circulation the fatty substance (E) reaches the lining of the brain, shown by shading, and the nerves.

Professor Dearborn gives an interesting sketch of the passage of fat from the intestine to the nerve cells. The villi are the chief organs of food absorption from the intestines. There are about 4,000,000 of these organs in the human. They are irregular, but in general finger-shaped organs, about one-tenth of an inch in length. Their combined surface area increases the absorptive area of the intestine at least a hundredfold over what it would be if the gut were a smooth-walled tube instead of one partly filled by these organs. The villus contains among its many complicated parts a central lymphatic tube, whose chief function is to receive the fat globules and to forward them into the circulation. Professor Dearborn says that it is extremely probable that the mechanism of the villus has as part of its function the providing of more fat from other parts of the body for the nerves. On this basis, he thinks the villus is understandable as a minute reservoir of adipose material, perhaps, indeed, chiefly, for the variable uses of the nervous system, nerve cells, and nerve fibres.

Kinesthesia is the second main factor in the condition of feeling good. It is defined as the fundamental behavior sense and by one authority as the quality by which we become aware of our position in space. Thousands of impulses, strains and

traces their only data by which the body may be co-ordinated.

The muscles of our body have always, even in the deepest slumber, some "onus" and are sending, together with their mechanical fellow tissues, floods of energy into the central nervous system. This is why physical activity makes happiness and creates mental activity.

Swimming, skating and classical dancing must, in the opinion of Professor Dearborn, create conditions of physiological happiness.

Anything that involves skill tends to create happiness through the kinesthetic sense. A slight-of-hand performance, guiding a fret-saw, engraving on metal or carving wood, drawing, pitching skillfully a baseball—all such movements have an inherent pleasantness. They supply in intensity of kinesthesia what they lack in quantity of stimulation.

The third main factor in making us feel good consists of the epicritic impulses received from the skin. The many functions of the skin are still imperfectly understood, but are now being investigated with interesting results. Only a few specialists in biology realize how complex this simple looking body mechanism really is. An accompanying diagram shows some of the important functions of the skin.

Among the more complex elements of



"A Very Important Group of Factors to Happiness Arises from Movements, Such as Classical Dancing or Doing Some Skilful Work." Madama Karavina Here Illustrates the Kind of Dancing That Helps Happiness.

Other sense organs, those of oxidation or evaporation, of tickle and of touch, are in a like manner "tunable" to outside conditions.

Gentle friction of the skin is also conducive to feeling well. Every known animal of sufficient evolutionary development acts as if it enjoyed gentle massage of the skin. Baths of suitable temperature have a most important influence in making us feel well because of the gentle stimulation of the skin, which is immediately felt by the deep-seated nervous receptors.

Two functions of the skin which spread a feeling of well-being through the system are evaporation and oxidation. The evaporation of the sweat poured out in the epidermis is the chief means of the regulation of temperature. The average daily amount is about 1,500 cubic centimeters (about 1,500 thimblefuls), but a group of glassmakers observed by Dr. McElroy had an average secretion of 25,000 cubic centimeters in the course of a nine-hour day. Occasionally the production stopped, whereupon the man would become ill, have to cease work and would be revived by the active efforts of his fellow workers. This shows that the sweating function is closely allied with feeling well. Sultry and muggy weather shows us the same thing unless free evaporation corrects it. Students in a summer school may enjoy a feeling of "Euphoria" with vigorous exercise when the gymnasium temperature is in the 90's.

The mysterious highly euphoric stimulation of a gale of wind, when not outside the favorable range of temperature, as in Nova Scotia in September, is well known to doctors, and this implies that gross friction, friction in the ordinary physical sense of the term, may be also a factor in making us "feel good." "Massage and the caress seem to possibly imply the same thing," comments Professor Dearborn.

well-nigh indispensable element of feeling well is stimulation of the skin in the way natural to it. Just as a Spring wind blowing over a rich, natural meadow beneficially influences all the different kinds of herbage at once, so a proper stimulation of the skin influences the whole human organism.

Experiments have proved that air which is "dead," i. e., not moving, humid and too warm, humid and too cold, or lacking in oxygen, is a ready occasioner of general discomfort, ill-defined irritations in stomach and intestines and a rapidly rising temperature in the skin. All that science can say on this point now is that dead air means a lack of movement over the skin; air that is humid and too warm means a lack of stimulation by the most suitable temperature and by evaporation; air that is humid and too cold means similarly a lack of the most suitable temperature and by evaporation.

and a lack of dryness. Lack of oxygen in the air, whether from its general chemical composition or from its utter deadness next to the skin, means a lack of stimulation in the various receptors.



The Various Functions of the Skin That Help Us to "Feel Good."
 1. Protection against injury. 2. Perception of heat. 3. Sensation. 4. Sweat production. 5. Lubrication or sebum production. 6. Respiration. 7. Absorption. 8. Coloration. 9. Hair production.

the human skin are the heat-receptors, cold-receptors, pain-receptors, pleasure-receptors, tickle-receptors and "arrectores pilorum" or "hair raisers."

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